REMARKS

Claims 1, 2, and 4-28 are presently pending in the application. Claim 3 has been canceled, and Claims 21-28 added. Reconsideration and allowance of all claims are respectfully requested in view of the following remarks.

The Examiner has rejected Claim 2 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey that the Inventors had possession of the claimed invention. The Examiner alleges that "wherein the terminal carboxylic groups are represented by both formula 1 and formula 2 is not supported by the specification".

The Applicants respectfully submit that page 10, first paragraph, of the present specification states that the "optical disc 1 holds, on the surface of the surface layer 5, an amine salt compound of perfluoropolyether having carboxyl terminal groups, as shown by the following formula (1) and/or (2):". Further, page 12, lines 2-4, of the present specification, disclose that R_1-R_3 in formulas (1) and (2) represent desirably a long-chain hydrocarbon group with a number of carbon atoms not less than 10, as recited in Claim 2. Therefore, the terminal carboxyl groups being represented by both formula (1) and formula (2) is supported by the specification and the Examiner's rejection of Claim 2 should be withdrawn.

The Examiner has rejected the Amendment filed March 8, 2002 under 35 U.S.C. 132 because it introduces new matter into the disclosure.

The Applicants withdraw their request for entry of the proposed amendments to page 9, at the first full paragraph, of the present specification.

The Examiner has rejected Claims 1-20 under 35 U.S.C. 112, second paragraph, as being indefinite, stating that the term H is not defined in Claim 5.

With respect to the Examiner's allegation that "H" is indefinite with respect to Claim 5, the

Applicants respectfully submit that page 9, line 7, of the present specification defines "H" is "in terms of pencil hardness". Thus, one of ordinary skill in the art would know that pencil hardness is universally recognized according to the International Organization for Standardization (ISO), and that "H" relates to a predetermined hardness "H" which is not necessarily defined *per se*. Rather, "H" is defined experimentally and in relative (or comparison) terms, by "the optical disc 1" having "a pencil hardness not less than H", where the optical disc "is not damaged on collision against the objective lens" (in other words, "H" would be the amount determined experimentally where the optical disc is not damaged on collision against the objective lens), and preferably, the optical disc has a pencil hardness "not less than "2H" (see page 9, lines 6-12 of the present specification). Thus, the term "H" is defined, and Claim 5, which recites "wherein the surface hardness of the side illuminated by light is not less than H in terms of the pencil hardness" is supported by the specification at page 9, and is definite.

The Examiner has finally rejected Claims 1-9, 11, 14-16 and 18-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kondo et al. (U.S. 5,536,425). The Examiner has also rejected Claims 10, 12-13, 17 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kondo et al. (U.S. 5,536,425) in view of Akutsu (U.S. 5,864,357). Claim 3 has been canceled. For the following reasons the prior art rejections are respectfully traversed.

The Applicants respectfully submit that Kondo et al. do not teach or suggest an optical disc with a light transmitting layer formed on the recording portion, wherein the light transmitting layer is formed of one of a polycarbonate sheet and a UV light curable resin, on the recording portion,the light transmitting layer having a thickness t of 10 to 177 μm, as recited in amended Claim 1.

Rather, Kondo et al. are silent with respect to a thickness t of the light transmitting layer. Although the Examiner alleges that this feature is a matter of optimization, the Applicants respectfully disagree. In particular, the thickness t of the light transmitting layer was determined by the Applicants to

be a critical feature, since in view of the trend towards shorter wavelength light, the thickness of the light transmitting layer is calculated by reducing the wavelength and increasing the numerical aperture (NA). Thus, in the case of the wavelength being 0.4 μm, in view of the trend toward the shorter light wavelength, having a light transmitting layer of a thickness t which is less than 177 μm is based on the supposition that the NA is at least 0.78. (See page 17, lines 6-10, of the present specification).

Specifically, the lower limit of the thickness of the light transmitting layer 4 is determined based on the protective function of the light transmitting layer in its role of protecting the signal recording layer or the reflective film 2. It is desirable that, in view of the reliability and the effect of collision of the double lens, the thickness of the light transmitting layer 4 is not less than 10 μm. (See page 17, lines 17-21, of the present specification).

Further, in view of the relationship between the thickness t of the light transmitting layer 4 and the skew, the thickness t of the light transmitting layer 4 is appropriately set to 10 to 177 μm in order to accommodate the wavelength range from the red laser light in current use to the blue laser light to be used in the future. (See page 18, liens 1-8 of the present specification).

Accordingly, Claim 1 is not obvious over Kondo et al., and the rejection of Claim 1 under 35 U.S.C. §103 should be withdrawn.

With respect to Claim 4, the Applicants respectfully submit that Kondo et al. do not teach or suggest the optical recording medium, wherein the light transmitting layer satisfies the relationship:

$$|\Delta t| \leq 5.26 \times (\lambda/NA^4)\ \mu m,$$

where Δt is thickness variation of the light transmitting layer and NA and λ are the numerical aperture and the wavelength of the optical recording medium.

Rather, as stated above, Kondo et al. do not disclose or suggest these features for a thickness variation of a CD, which is ±100 μm. The thickness variation for DVD of the light transmitting layer 4

for NA = 0.6, is prescribed to be ±30 μm. A higher precision is required of the thickness variations of the light transmitting layer 4, particularly if a high recording density is to be achieved by higher NA or a shorter wavelength. Experiments show the relationship between the thickness variation of the light transmitting layer and the jitter. Thus, with increasing recording density, the thickness variation allowed for the thickness t of the light transmitting layer 4 needs to be not larger than $|\Delta t| \leq 5.26 \times (\lambda/NA^4)$ μm (see pages 19-20 of the present specification).

Accordingly, Claim 4 is not obvious over Kondo et al., and the rejection of Claim 4 under 35 U.S.C. §103 should be withdrawn.

With respect to Claim 7, the Applicants respectfully submit that Kondo et al. do not teach or suggest the dynamical frictional coefficient of that side of the optical recording medium having the amine salt is not higher than 0.3.

Rather, Kondo et al. are silent with respect to this feature. Although the Examiner alleges that col. 11, lines 55-56 of Kondo et al. disclose a dynamic frictional coefficient, the Examiner is incorrect as Kondo et al. are silent with respect to the dynamical frictional coefficient. However, in the present invention, the dynamical frictional coefficient equal to 0.3 or less on the surface of the surface layer 5, prevents the surface of the optical disc 1 from being damaged if it is slidingly contacted with the objective lens. (See page 13, lines 15-18 of the present specification).

Accordingly, Claim 7 is not obvious over Kondo et al., and the rejection of Claim 7 under 35 U.S.C. §103 should be withdrawn.

Further, with respect to Claim 16, Kondo et al. do not teach or suggest an optical recording medium wherein the light-transmitting surface layer is formed by spin coating to a thickness of 0.1 to 10 μm.

The Applicants respectfully submit that Kondo et al do not teach or suggest this limitation.

Rather, Kondo et al. are silent with respect to this feature. However, in the present invention, if the thickness of the surface layer 5 is thicker than 10 μm, thickness variations tend to be produced in the surface layer 5. If the surface layer is thinner than 0.1 μm, it is difficult to improve the surface hardness of the optical disc 1 sufficiently. However, with a thickness of 0.1 μm to 10μm, the optical disc 1 can be improved in surface hardness without producing thickness variations. (See page 14 of the present invention).

Accordingly, Claim 16 is not obvious over Kondo et al., and the rejection of Claim 16 under 35 U.S.C. §103 should be withdrawn.

Still further, with respect to Claim 18, Kondo et al. do not teach or suggest an optical recording wherein a surface tension of the light-transmitting surface layer is set to a value that is smaller than a critical surface tension of the light transmitting layer.

Rather, Kondo et al are silent with respect to this feature. However, in the present invention, if the surface layer 5 is formed of a material having a surface tension lower than the critical surface tension of the light transmitting layer 4, it is possible to prevent the wetting between the light transmitting layer 4 and the surface layer 5 to maintain adhesion between the light transmitting layer 4 and the surface layer 5. (See page 15 of the present specification).

Accordingly, Claim 18 is not obvious over Kondo et al., and the rejection of Claim 18 under 35 U.S.C. §103 should be withdrawn.

Finally, with respect to Claim 19, Kondo et al. do not teach or suggest the optical recording medium wherein a moisture absorption ratio of the light-transmitting surface layer is set to be higher than a moisture absorption ratio of the light transmitting layer.

Rather, Kondo et al. do not disclose or suggest this feature. However, in the present invention, since it is crucial with the surface layer 5 to improve hardness of the light incident side surface and to

prevent electricfication, the surface layer 5 needs to exhibit low electrical conductivity. Thus, it is desirable that ions contributing to electrical conduction be contained in the surface layer 5, so that a material having the moisture absorption ratio higher than that of the light transmitting layer 4 needs to be used for the surface layer 5.

Accordingly, Claim 19 is not obvious over Kondo et al., and the rejection of Claim 19 under 35 U.S.C. §103 should be withdrawn.

Further, since Claim 2, 3, 5-9, 11, and 14-15, depend from Claim 1, they are also patentably distinguishable over Kondo et al. for the reasons cited above with respect to Claim 1.

With respect to Claims 10, 12-13, 17, and 20, Akutsu does not make up for the deficiencies in Kondo et al. Accordingly, Claims 10, 12-13, 17 and 20 are patentable over either the individual or the combination of the Kondo et al. and Akutsu references.

New apparatus Claims 21-28 are also patentable over the applied prior art since they depend from Claim 1.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 19-3140.

Respectfully submitted,

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APPENDIX I

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 7, the second paragraph was amended as follows:

Referring to the drawings, preferred embodiments of [according to] the present invention will be explained in detail. In the following explanation, the optical recording medium is a disc-shaped optical recording medium in which light is illuminated from the side of the light transmitting layer formed on a support having a signal information portion to record and/or reproduce the signals. This invention is, however, not limited to this particular embodiment and may be applied to a variety of optical recording mediums, such as a card- or sheet-shaped recording medium.

Page 17, the third full paragraph was amended as follows:

If magnetic field modulation in the case of the optical disc 1 provided with a signal recording layer for recording and/or reproducing magnetic signals, with the optical disc 1 used being a magneto-optical disc, is considered, a thinner thickness of the light transmitting layer 4 is desirable. In [moire] more detail, if the thickness of the light transmitting layer 4 is set to, for example, 30 μm, recording and/or reproduction by the magneto-optical disc is facilitated.

IN THE CLAIMS:

Claim 3 was canceled.

The claims were amended as follows:

1. (Twice Amended) A disc-shaped optical recording medium, comprising:

a support having at least two major surfaces;

a recording portion formed on one of the major surfaces of the support for recording signals thereon;

a light transmitting layer formed of one of a polycarbonate sheet and a UV light curable resin, on the recording portion, said light transmitting layer having a thickness t of 10 to 177 μm;

wherein the light transmitting layer comprises a surface that is configured to receive and transmit illuminating light to the recording portion to record and/or reproduce signals; and

a surface layer formed of an amine salt compound held on the surface of the light transmitting layer, wherein the amine salt compound is a compound of perfluoropolyether having terminal carboxylic groups, represented by the chemical formulas (1) and/or (2):

$$R_f - COO^- N^+HR_1R_2R_3$$

(formula 1)

$$R_1R_2R_3N^+H^-CO-R_f- COO^- N^+HR_1R_2R_3$$

(formula 2)

where R_f denotes a perfluoropolyether group and R_1, R_2 and R_3 denote hydrogen or a hydrocarbon group.

5. (Twice Amended) The optical recording medium according to claim 1, wherein a surface hardness of that side of the optical recording medium having the amine salt is not less than H in terms of pencil hardness[, where H in terms of pencil hardness is stated in an industry standard].

11. (Twice Amended) The optical recording medium according to claim 9, wherein the light-transmitting surface layer is formed by at least one of sputtering [or] and spin-coating and has a thickness of 1 to 200 nm.

13. (Twice Amended) The optical recording medium according to claim 12, wherein the inorganic material is at least one of indium oxide [or] and tin oxide, either alone or in composition.

14. (Twice Amended) The optical recording medium according to claim 12, wherein the light-transmitting surface layer is formed by at least one of sputtering [or] and spin coating to a thickness of 1 to 200 nm.

Claims 21-28 were added.